CLAIMS

SUB A1

1. Monoatomic and monocrystalline layer of diamond type carbon, this layer being characterised in that it is formed on the surface of a monocrystalline substrate of SiC and extends closely over the totality of this substrate (2).

2. Monoatomic and monocrystalline layer according to claim 1, the SiC monocrystalline substrate being a thin layer (2) of monocrystalline SiC in cubic phase ß-SiC (100) formed on a platelet of Si, the monoatomic and monocrystalline layer thus closely covering the totality of this platelet.

3. Monoatomic and monocrystalline layer according to claim 1, the monocrystalline substrate in SiC being a platelet of monocrystalline SiC in hexagonal phase, the monoatomic and monocrystalline layer thus closely covering the totality of this platelet.

SUB A2

4. Monoatomic and monocrystalline layer according to any one of claims 1 to 3, covered with a monocrystalline later of diamond formed by growth from the monoatomic and monocrystalline layer, the latter acting as matrix.

5. Manufacturing process of a monoatomic and monocrystalline layer of diamond type carbon, this process being characterised in that one forms a monocrystalline substrate in SiC terminated by a carbon

atomic plane according to a c(2x2) reconstruction, this plane being a plane of carbon-carbon dimers (4) of sp configuration , and in that one carries out at least one annealing of this substrate, this annealing being able to transform the plane of carbon-carbon dimers (4) of sp configuration into a plane of carbon-carbon dimers (8) of sp^3 configuration thus forming a monoatomic and monocrystalline layer of diamond type carbon.

6. Process according to claim 5, in which the SiC monocrystalline substrate is prepared from a thin layer of monocrystalline SiC in cubic phase ß-SiC with a face (100) terminated by a layer of Si.

7. Process according to claim 5, in which the SiC monocrystalline substrate is prepared from a monocrystalline SiC platelet in hexagonal phase with a face (1000) terminated by a layer of Si.

8. Process according to any one of claims 6 and 7, in which, to obtain the atomic plane of carbon according to the reconstruction c(2x2), an annealing is carried out capable of eliminating the layer of Si.

9. Process according to one or the other of claims 6 and 7 in which, to obtain the atomic plane of carbon according to the reconstruction c(2x2), a deposit of hydrocarboned molecules is made on the Si layer followed by cracking of these molecules.

END A2

10. Process according to claim 9, in which the hydrocarboned molecules are chosen from among the group comprising the molecules of C_2H_4 and the molecules of C_2H_2.

11. Process according to any one of claims 5 to 10, in which, to transform the plane of carbon-carbon dimers of sp configuration into a plane of carbon-carbon dimers of sp^3 configuration, one carries out an annealing or a plurality of successive annealings, at a temperature approximately equal to 1250°C, of the monocrystalline substrate in SiC terminated by the atomic plane of carbon according to the reconstruction c(2x2), the total time of annealing being greater than or about equal to 25 minutes.